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Social and intercultural dynamics in industry's commercialisation of technology from publicly-funded research laboratories

Ronald W. Murnain
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SOCIAL AND INTERCULTURAL DYNAMICS
IN INDUSTRY'S COMMERCIALISATION OF TECHNOLOGY
FROM PUBLICLY-FUNDED RESEARCH LABORATORIES

A thesis submitted in fulfilment of
the requirements for the award of the degree

DOCTOR OF PHILOSOPHY

from

UNIVERSITY OF WOLLONGONG

by

RONALD W. MURNAIN, B.Sc.(hons)




CENTRE FOR RESEARCH POLICY

1996

CERTIFICATE OF ORIGINALITY

I hereby declare that this thesis is the result of my own research and that it contains no material, in whole or in part, that has been submitted for an award including a higher degree, to any other university or institution.

I also declare that this thesis contains no material previously written or published by another person, except where due reference is made in the text of the work.



Ronald W. Murnain

Donald Horne (Why Our Luck Changed, Sydney Morning Herald,
13 January 1996) has described a task for
his hypothetical "Royal Commission into the Business Culture":

*Even when [industrial] successes come ..., has
it been from hard economics or from cultural
change in the wider views of the world (and of
what Australia can do in it)? ... The Com-
mission conducts a nationwide search for at
least one writer in Australia who reports,
comprehensively, regularly and widely on busi-
ness as an activity that involves people as
well as balance sheets, that involves imagin-
ation as well as interest rates.*

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ABSTRACT

The *commercialisation* process through which industry uses technology from publicly-funded research laboratories, involves a laboratory and one or more companies establishing a *commercialisation interface*. This brings together the sometimes conflicting research and business cultures.

Although commercialisation is ultimately a social process, studies of commercialisation interfaces have often focused more on the contractual, administrative or economic structures set up to manage them, than on the social and intercultural dynamics that create and sustain them. So previous research has largely left unanswered the questions that drive this thesis:

- * How does the social structure of the laboratory-company interface emerge and endure?
- * What behaviour contributes to the interface's social effectiveness?

The study draws on theories on intergroup contact, trust, conflict, power, ethnic adaptation, organisational adaptation and symbolic representation, to identify *dimensions of social behaviour* likely to influence the status of the commercialisation interface. These dimensions provide an analytical framework for investigating what makes commercialisation interfaces effective. The framework is applied to analyse commercialisation case studies and to formulate a theoretical model which helps explain the social/intercultural basis of commercialisation.

The analysis reveals that different dimensions of behaviour influence the social effectiveness of interfaces not only to different degrees, but also in fundamentally different ways.

The impact on interface effectiveness of several influential dimensions of social behaviour was encouraged or reinforced by *the contexts* of the interfaces in the case studies: their historical, cultural context and/or their contemporary, structural context. Other influential dimensions were largely unaffected by the interfaces' contexts. Behaviour's *source of influence* on interface effectiveness is therefore important.

The dimensions of social behaviour were found also to have different *modes of influence* on interface effectiveness. Some dimensions affected the way participants approached their forthcoming involvement in the interface (an '*individual*' mode of influence). Other dimensions had a '*collective*' mode of influence; here the behaviour was tightly bound up with the collective activity of both partners and their representatives within the interface itself, as that small group set about its tasks.

The importance of these channels through which behaviour actually gains its influence on interface effectiveness suggests that the interpretation and management of social behaviour in commercialisation must focus on the interplay between behaviour's mode and source of influence. The thesis argues that this interaction is crucial in generating the interface's social/intercultural dynamics. The interface is very much the product of social adaptation: adaptation of individuals to social forces generated in the interface itself and elsewhere, and adaptation of the interface as a small group to cultural and other forces. The thesis shows that these processes of adaptation can readily be understood in terms of the interplay of behaviour's mode and source of influence.

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Working away from the University meant that I relied on library resources in my home town, Canberra: in particular the libraries of the Australian National University. Access to these resources was important.

Of course key inputs were made by the CSIRO, SIROTECH, company and other people I interviewed. These people were free with both their time and their personal thoughts on the various commercialisation ventures: often at some potential inconvenience, embarrassment or risk.

I received particular assistance and encouragement from the contacts on the respective case studies in CSIRO, who arranged use of the ventures, the interviews, and access to written - sometimes sensitive - file material.

Assistance from all these people made identifying, setting up and investigating the case studies simpler than I had expected.

An important part of the knowledge-base upon which the thesis built came from my professional experience over the 1970s, 80s and early 90s: mainly in CSIRO. Over this period, far too many people to name gave me guidance, ideas and stimulation. They are hereby thanked.

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